COURSE TITLE: Research Methods

COURSE CODE: PSY 360

CREDITS: 4

CONTACT HOURS: 75

PREREQUISITES: PSY 348 or permission from Department Chairperson

REQUIRED FOR: B.S. in Applied Psychology

GENERAL EDUCATION: This course does not fulfill any general education requirements

COURSE DESCRIPTION

This course will present the scientific method within the context of applied psychology. Research techniques and methods will be examined for the formulation of hypotheses, development of testable objectives, experimental design, subject selection, data collection, data analysis and interpretation, and report preparation. This course will focus on laboratory-based methods and simple statistical procedures for the analysis of data. Students will apply the concepts and methods in laboratory exercises.

REQUIRED FACILITIES AND SOFTWARE

Computer laboratory equipped with SPSS V16.0 software

PROPOSED TEXTS


COURSE OBJECTIVES

- The student will acquire knowledge of the basic principles of the scientific method.

- The student will be able to locate information necessary to conduct research, to use computerized databases, and be familiar with psychology web-based resources.

- The student will be capable of critically reviewing research reports and to synthesize a body of literature.

- The student will be able to develop testable hypotheses.
• The student will be knowledgeable of general research designs, experimental methods, and good research practices. They will be able to select appropriate experimental designs to test hypotheses.

• The student will understand the ethical treatment of human and animal participants in research and will be knowledgeable of the institutional requirements for conducting research.

• The student will be able to conduct simple statistical analyses of data and to interpret the results of the analyses.

• The student will be able to draw conclusions from the research and to assess the generalizability of study results.

• The student will be able to write research reports and to present findings to colleagues.

COURSE OUTLINE

The following is an overview of the topics to be covered in this course. Each unit will include relevant theory, current research, and its application.

Unit 1: The Role of Scientific Methods and Theories in the Construction of Knowledge
The field of experimental psychology addresses the scientific methods and practices used by basic and applied psychologists to conduct research. In this unit an introduction to experimental psychology will be presented. Psychological research methodology will be considered within the framework of the hypothetico-deductive system. This is one approach to knowledge development and other epistemological approaches will be discussed as a basis for contrast with scientific approaches. The limits of theory development and testing will be addressed.

Unit 2: Ethics in Research
In this unit, the ethical treatment of people and animals that participate in studies and experiments will be presented and discussed. While these topics will be continuously discussed during this course, in this unit the formal requirements for conducting research and the researcher's responsibility for ensuring that ethical standards are met will be addressed. Requirements such as informed consent and the rights of participants to terminate their participation in research without consequences, are essential to responsible research. In addition to federal, state, and institutional requirements, a code of ethics exists in the discipline of psychology. We will review these issues as an integral aspect of conducting research.

Unit 3: Hypotheses Formation
Hypotheses are statements about nature that are developed from theory and generally specify something about nature that the scientist thinks to be accurate and that can be tested in research. In this unit the distinction between conceptual and experimental hypotheses will be presented. The operationalization of hypotheses will be discussed in terms of specifying the relationship between independent variables and dependent variables.

Unit 4: Literature Analysis
One very basic type of research is the literature analysis. The purpose of literature analyses is to examine a large body of studies in order to determine common methods, findings, and issues and to
develop new hypotheses. In this unit we will present the methods involved in information evaluation including how to search for information (including library resources, computerized databases, and web-based resources), conduct critical literature reviews, and to apply statistical techniques called meta-analysis to facilitate the analysis.

Unit 4: Psychometrics: Variable measurement
While hypotheses specify the relationships between independent and dependent variables, a fundamental aspect of research is the ability to measure both. In this unit, the measurement of such variables will be presented. Variables will be discussed in terms of measurement scales and measurement properties such as reliability and validity. Measurement provides the means to quantify variables of interest. Equally important in many types of research is the specification of measurement criteria, i.e., what the observed values mean. Each of these aspects of measurement will be discussed.

Unit 5: Research and Hypothesis Testing
Once researchers have specified the variables in their hypotheses in measurement terms, they are ready to begin the process of testing their hypotheses. In most simple studies, the independent variable is manipulated (varied by the researcher) and the variation in the dependent variable is observed and recorded. The essence of hypothesis testing is the evaluation of how much of the variation observed in the dependent variable can be explained by the independent variable. Statistical techniques provide tools for this analysis. However, statistical tools are not enough. The research must consider other factors as well. These factors can be summarized by examining a studies internal and external validity. Good studies try to maximize the primary variance, control the secondary variance, and minimize error variance. In this unit, the principles and the practices that scientists use to accomplish these goals will be presented and discussed. The use of statistical techniques will also be introduced as being fundamental to the research design process.

Unit 6: Types of Research
A great variety of approaches are available to researchers from single participant to large group designs, from field studies to laboratory experiments, from one shot studies to long-term longitudinal investigations. In this unit a road map to the types of research will be presented and the advantages and disadvantages of each will be discussed. Designs covered will include observational, correlational, quasi-experimental, and true experimental designs. This includes specification of research participants, identification of independent variables and their levels, selection of appropriate measures of performance, identification of an experimental design, the logic and process of randomization, and the concepts of between and within-subject variability. The application of these components of experimental designs to single and multifactor designs will be discussed. Statistical analysis of data that are collected using these designs will be discussed.

Unit 7: Reporting Research
Research reports follow a fairly standardized format. This format aids the writer to organize the material and helps readers rapidly find the information they need. In this unit the research reporting format of the American Psychological Association (APA) will be presented. Laboratory exercises conducted for this project will be required to be in APA format.